

In the Claims:

Amend the claims as indicated below:

1 (currently amended). A method for ~~low-cost signature~~ testing of electronic circuits produced by a manufacturing process subject to process variations and characterized by a selected set of performance parameters, comprising the steps of:

constructing a model for predicting said performance parameters for a first
electronic circuit produced by the manufacturing process as a result of
receiving the output of one or more second electronic circuits produced by
the manufacturing process and stimulated with a selected test stimulus;

providing said output to said model;

obtaining a prediction of said performance parameters by use of said model;

measuring said performance parameters independently of said model; and

iteratively varying said test stimulus to minimize the error between said prediction
and the corresponding measured values for said performance parameters,
for determining an optimized test stimulus.

2 (original). The method of claim 1, further comprising constructing said model as a linear model.

3 (original). The method of claim 2, further comprising revising said model for at least some of said iterations of said test stimulus.

4 (currently amended). The method of claim 1, further comprising constructing said model as a non-linear model for predicting said performance parameters for a manufactured electronic circuit, including applying the optimized said test stimulus to one or more manufactured training circuits, obtaining respective signature outputs of said training circuits, measuring said performance parameters for said training circuits and relating said signature outputs of said training circuits to the measured said performance parameters for said training circuits.

5 (currently amended). The method of claim 4, further comprising applying the optimized said test stimulus to said ~~manufactured~~ first electronic circuit, obtaining a signature output thereof, applying said signature output of said ~~manufactured~~ first electronic circuit to said non-linear model, and obtaining a prediction of said performance parameters of said ~~manufactured~~ first electronic circuit by use of said model.

6 (currently amended). The method of claim 5, further comprising characterizing said signature outputs of said training circuits, characterizing said signature output of said ~~manufactured~~ first electronic circuit, comparing the results of said steps of characterizing with each other to determine a deviation therebetween, comparing said deviation to a predetermined threshold and, if said deviation is greater than said threshold, updating said ~~non-linear~~ model, including relating said signature outputs of said training circuits and said signature output of said ~~manufacturing~~ first electronic circuit to the measured said performance parameters for said training circuits and said ~~manufacturing~~ first electronic circuit.

7 (currently amended). The method of claim 4, further comprising providing performance specifications for said ~~manufactured~~ first electronic circuit, applying the optimized said test stimulus to said ~~manufactured~~ first electronic circuit, obtaining a signature output thereof, applying said signature output of said ~~manufactured~~ first electronic circuit to said ~~non-linear~~ model, and comparing said signature output of said first electronic circuit with said performance specifications for determining whether said ~~manufactured~~ first electronic circuit fails to meet said performance specifications.

8 (currently amended). The method of claim 5, wherein said step of applying includes modulating an RF carrier with the optimized said test stimulus, and wherein said step of obtaining includes demodulating the output of said first electronic circuit by said RF carrier to obtain said signature output thereof.

9 (currently amended). An apparatus for ~~low cost signature~~ testing of electronic circuits produced by a manufacturing process subject to process variations and characterized by a selected set of performance parameters, comprising:

a computerized model for predicting said performance parameters for a first electronic circuit produced by the manufacturing process as a result of receiving the output of one or more second electronic circuits produced by the manufacturing process and stimulated with a selected test stimulus;[,]

a device for iteratively varying said test stimulus;[,]

a computer program embodied in a machine readable form and adapted to command said device to iteratively vary said test stimulus so as to minimize the error between

the performance parameters as predicted by said model and corresponding measured values for said performance parameters, for determining an optimized test stimulus.

10 (currently amended). The apparatus of claim 9, wherein said ~~computerized~~ model is a linear model.

11 (currently amended). The apparatus of claim 10, wherein said computer program is further adapted for revising said model for at least some of said iterations of said test stimulus.

12 (currently amended). The apparatus of claim 9, wherein said model is a further comprising a computerized non-linear model for predicting said performance parameters for a manufactured electronic circuit, obtained by applying the said optimized said test stimulus to one or more ~~manufactured~~ training circuits produced by the manufacturing process, obtaining respective signature outputs of said training circuits, measuring said performance parameters for said training circuits and relating said signature outputs of said training circuits to the measured said performance parameters for said training circuits.

13 (currently amended). The apparatus of claim 12, wherein said device is further adapted to apply the said optimized said test stimulus to said ~~manufactured~~ first electronic circuit and obtain a signature output thereof, wherein said computer program is adapted to receive said signature output of said first electronic circuit, apply the received said signature output ~~of said manufactured circuit~~ to said ~~computerized non-linear~~ model, and obtain a prediction of said performance parameters of said ~~manufactured~~ first electronic circuit by use of said model.

14 (currently amended). The apparatus of claim 13, wherein said computer program is further adapted for characterizing said signature outputs of said training circuits, characterizing said signature output of said ~~manufactured~~ first electronic circuit, comparing the results of said

steps of characterizing with each other to determine a deviation therebetween, comparing said deviation to a predetermined threshold and, if said deviation is greater than said threshold, ~~the apparatus further includes an updated computerized non-linear~~ update said model for replacing ~~said first computerized non-linear model~~ obtained by steps including relating said signature outputs of said training circuits and said signature output of said ~~manufacturing~~ first electronic circuit to the measured said performance parameters for said training circuits and said ~~manufacturing~~ first electronic circuit.

15 (currently amended). The apparatus of claim 12, wherein said device is further adapted to apply ~~the~~ said optimized ~~said~~ test stimulus to said ~~manufactured~~ first electronic circuit and obtain a signature output thereof, wherein said computer program is adapted to receive said signature output of said first electronic circuit, apply said signature output of said first electronic circuit to said ~~computerized non-linear~~ model, and compare said signature output of said first electronic circuit with performance specifications for said ~~manufactured~~ first electronic circuit, for determining whether said ~~manufactured~~ first electronic circuit fails to meet said performance specifications.

16 (currently amended). The apparatus of claim 13, wherein said device is adapted for modulating an RF carrier with the optimized test stimulus and demodulating ~~the a~~ direct output of said ~~manufactured~~ first electronic circuit by said RF carrier to obtain said signature output of said first electronic circuit.

17 (currently amended). The apparatus of claim 16, wherein said device includes a low-pass filter for low-pass filtering ~~the demodulated~~ said direct output of said first electronic circuit to obtain said signature output of said first electronic circuit.